

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

Paper No. 19

MAILED

SEP 04 2002

UNITED STATES PATENT AND TRADEMARK OFFICE

PAT. & T.M. OFFICE  
BOARD OF PATENT APPEALS  
AND INTERFERENCES

BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Ex parte PRADEEP K. DHAL, RICHARD T. INGWALL,  
ERIC S. KOLB, HSIN YU LI and DAVID A. WALDMAN

Appeal No. 2000-1079  
Application No. 08/970,066

ON BRIEF

Before KIMLIN, LIEBERMAN and KRATZ, Administrative Patent Judges.  
KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-14, all the claims remaining in the present application. Claim 1 is illustrative:

1. A process for preparing a hologram, which process comprises:

providing a holographic recording medium comprising an acid generator capable of producing an acid upon exposure to actinic radiation; a binder; a difunctional epoxide monomer or oligomer; and a polyfunctional epoxide monomer or oligomer, the difunctional and polyfunctional epoxide monomers or oligomers

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being capable of undergoing cationic polymerization initiated by the acid produced from the acid generator; and

passing into said medium a reference beam of coherent actinic radiation to which the acid generator is sensitive and an object beam of the same coherent actinic radiation, thereby causing the reference beam and object beam to interfere within said medium and cause cationic polymerization therein, thereby forming a hologram within said medium.

The examiner relies upon the following references as evidence of obviousness:

Keys et al. (Keys)	4,950,567	Aug. 21, 1990
Ohe et al. (Ohe)	5,698,345	Dec. 16, 1997
Sato et al. (Sato)	5,702,846	Dec. 30, 1997
Dhal et al. (Dhal)	WO 97/13183	Apr. 10, 1997
(PCT International Application)		

Eckberg et al. (Eckberg)	0,391,162	Oct. 10, 1990
(European Patent Application)		

J.V. Crivello and J.L. Lee (Crivello), "The Synthesis, Characterization, and Photoinitiated Cationic Polymerization of Silicon-Containing Epoxy Resins," 28 Journal of Polymer Science: Part A: Polymer Chemistry 479-503 (1990)

Appellants' claimed invention is directed to a process for preparing a hologram which comprises exposing to actinic radiation a composition which comprises, inter alia, a difunctional epoxide monomer or oligomer and a polyfunctional epoxide monomer or oligomer. According to appellants, they "have discovered that holographic recording media based upon a mixture of epoxide monomers of differing functionality record with reduced shrinkage, rendering these media especially suitable for

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use in digital data storage applications" (page 6 of Brief, first paragraph).

Appealed claims 1-4 and 12-14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Dhal in view of Ohe and Keys. Claims 1-4 and 12-14 also stand rejected under 35 U.S.C. § 103 as being unpatentable over the stated combination of references further in view of Sato. In addition, claims 1-14 stand rejected under 35 U.S.C. § 103 as being unpatentable over Dhal in view of Ohe, Keys, Crivello and/or Eckberg.

Appellants submit at page 13 of the Brief that they "are content to have all of the claims on appeal assessed as a single group." Accordingly, all the appealed claims stand or fall together with claim 1, and we will limit our consideration to the examiner's rejections of claim 1. We note that appellants' arguments are directed solely to the combination of the Dhal/Ohe/Keys references (see page 19 of Brief, first paragraph).

We have thoroughly reviewed each of appellants' arguments for patentability. However, we are in complete agreement with the examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of 35 U.S.C. § 103 in view of the applied prior art. Accordingly, we will sustain the examiner's rejections for essentially those

reasons expressed in the Answer, and we add the following primarily for emphasis.

Appellants "concede that Dhal describes a process which is generally similar to that of the present invention except that it does not use a mixture of difunctional and polyfunctional epoxide monomers, and that Dhal describes compositions using the difunctional monomer of present claim 4" (page 15 of Brief, fourth paragraph). As noted by the examiner and acknowledged by appellants, Dhal discloses that "[p]referred monomers for use in the present medium are those containing at least one epoxide or vinyl ether grouping, preferably a cyclohexene oxide grouping" (page 6, lines 25-26). Accordingly, based on this referenced disclosure alone that the preferred monomers contain at least one epoxide grouping, we find that one of ordinary skill in the art would have found it obvious to employ both difunctional and polyfunctional epoxide monomers, either singularly or in combination, in processes for preparing holograms like that disclosed by Dhal and presently claimed. It is well settled that it is a matter of obviousness for one of ordinary skill in the art to combine two or more materials when each is taught by the prior art to be useful for the same purpose. In re Kerkhoven, 626 F.2d 846, 850, 205 USPQ 1069, 1072 (CCPA 1980). Since it is

our view that Dhal would have suggested the use of a recording medium comprising either difunctional or polyfunctional epoxide monomers, or mixtures thereof, we find that the claimed process would have been prima facie obvious over Dhal alone. The conclusion of obviousness, however, is further buttressed by the disclosure of Ohe who, as acknowledged by appellants, discloses recording mediums comprising polyfunctional epoxide monomers which can be exposed to produce holograms. In particular, Ohe discloses hologram recording media comprising difunctional and polyfunctional epoxide monomers. Accordingly, based on the combined teachings of Dhal and Ohe, we are convinced that it would have been obvious for one of ordinary skill in the art to employ appellants' combination of difunctional and polyfunctional epoxide monomers in recording media for preparing holograms. Also, as explained by the examiner, Keys provides motivation for selecting polyfunctional epoxide monomers in order to effect more cross-linking.

Appellants' principal contention is that "there is nothing in Dhal or Ohe to indicate that adding a polyfunctional epoxide monomer to the difunctional epoxide monomers used in Dhal will provide a medium with the minimal shrinkage required for good digital data storage holographic performance" (sentence bridging

pages 15 and 16 of Brief). However, it is not necessary for a finding of obviousness under 35 U.S.C. § 103 that the prior art recognize all the advantages of utilizing a particular prior art composition. Furthermore, as significantly explained by the examiner, it would appear that Example 6 of Dhal attains the same level of shrinkage that is disclosed by appellants as representative of the present invention at page 10 of the specification, lines 18-21 (see page 8 of Answer, first paragraph). The examiner has properly noted that:

The applicant has failed to present evidence which measures the shrinkage of the hologram for the Dhal et al. materials a [sic, as] well as those embraced by the claims, noting that the instant specification and the Dhal et al. reference include [sic, includes] inventors in common and that assumably [sic, presumably] they have access to the material of both references and time to do so [sentence bridging pages 9 and 10 of Answer].

Stated otherwise, appellants have proffered no objective evidence of nonobviousness, such as unexpected results, which would serve to rebut the inference of obviousness established by the applied prior art.


In conclusion, based on the foregoing and the reasons well-stated by the examiner, the examiner's decision rejecting the appealed claims is affirmed.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

Edward C. Kimlin  
EDWARD C. KIMLIN  
Administrative Patent Judge

  
PAUL LIEBERMAN  
Administrative Patent Judge

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